

isotropic electrical conductivity in these references, and the materials of these references are not made in the same fashion as applicants' materials. There is no suggestion in these references that isotropic. U.S. Patent 5,198,153 discloses the preparation of the polyaniline. Applicants request a clarification of this rejection as the content of the rejection does not appear to apply to what the claim covers.

The Examiner has consistently taken the position that the disclosures of the references inherently meet the language of the claims. These rejections generally are based upon taking the reference to the limit of what it discloses and via an unwarranted assumption extrapolating the teaching to include what applicants have disclosed. In the rejection of claim 11, the Examiner states in the Official Action that the "... prior art inherently meets the instant properties." Applicants again request the Examiner to produce references to support the Examiner's statements or an Affidavit as provided for in 37 C.F.R. 104(d)(2) for the Examiner to qualify himself as an expert to make these statements, or with draw the rejection.

The Examiner states in the Official Action that example 6 of Han shows the use of a mixture of NMP and tripropylamine.

Applicants enclose herewith a copy of Example 6 of Han to establish that there is no disclosure of NMP in Han.

EXAMPLE 6

Green conductive poly(anilinium tosylate) powders (5 g) was prepared as in Example 3, and was suspended in 35 mL of N-methyl pyrrolidinone. After the addition of 3.3 g of tripropylamine, the suspended poly(anilinium tosylate) powder started to dissolve forming a blue solution of low viscosity (water-like viscosity). The resulting solution mixture was then heated at 83.degree. C. for 20 minutes to form a highly viscous homogeneous blue solution. This viscous solution was further transformed into a blue solid rubber-like gel by further heating at 105.degree. C. for 20 minutes. From this gel, blue conductive polymer fibers were spun. After air-drying and redoping with 10 wt % p-toluene sulfonic acid for 20 minutes, green conductive fibers were obtained. The conductivity was about 0.15 cm.sup.-1 as measured by a four-in-line probe. - - -

* * * * *

Ikkala discloses a polyaniline which is blended with a “functionalized protonic acid solute.” The acid solute is used to protonate the polyaniline to form complexes. Ikkala states that the protonic acids are not necessarily miscible with non-polar or weakly polar organic liquids. This type of system disclosed by Ikkala would not be compatible with Applicants’ invention.

The system of Ikkala is not compatible with Applicants’ system and does not specifically disclose:”...said polycrystalline material is characterized by a degree of crystallinity regions and a degree of amorphous regions, said degree of crystallinity regions and said degree of amorphous regions are selected by selecting the composition of said additive, and the amount of said additive...” as claimed by Applicants in Claim 1.

The Examiner is respectfully requested to reconsider his rejection of Claims 1 - 16, 20, 22 - 25 and 40 - 42 under 35 U.S.C. §103(a) as obvious over Han (US 5,171,478) in view of Cao, et al. (5,232,631).

Han discloses a thermally induced chain coupling and/or crosslinking of polyanilines to form a polyaniline of higher molecular weight. The process used is a melt process. In the event a solution is used there is no teaching that Han removes the solution. The disclosure of Cao, et al. is set forth above.

In Claim 1, Applicants state: “...said additive provides local mobility to said polymer to allow said polymer to associate with one another to achieve a crystalline state; and removing or partly removing said solvent, substantially leaving said additive therein as remaining additive, said remaining additive provides local mobility to said polymer to achieve said crystalline state thereby comprising a polycrystalline material, said polycrystalline material is characterized by a degree of crystallinity regions and a degree of amorphous regions, said degree of crystallinity regions and said degree of amorphous regions are selected by selecting the composition of said additive, and the amount of said additive...” (Emphasis added)

There is no disclosure in Han or Cao, et al. which (meets or) renders obvious the above-identified and other elements found in Claim 1.

The Examiner has stated that prior rejections form the basis for his rejections in the instant Official Action, so Applicants will make reference to them in attempts to respond to the rejections in this response.

The Examiner asserts that the cited art shows treatment of conducting polymers by plasticizers or solvents. The Examiner points to prior rejections as to the teachings found in the cited references to support his rejections. There is no teaching of isotropic electrical conductivity in these references and the materials of these references are not made in the same way as applicants' materials. There is no suggestion in these references that isotropic electrical conductivity can exist in an electrically conductive polymer.

The Examiner, in prior rejections, commented on Example 6 pointing to where Han teaches stretch orientation and contends that Han teaches the use of a plasticizer and a solvent. The Examiner has totally ignored the rest of the limitations in Applicants' claims as rejected, for which there is no teaching or suggestions in Han.

Applicants' claims distinguish over Han and Cao, et al. in that Applicants include limitations which are not found in Han which render the subject matter patentable.

As to the above-rejected claims, the Examiner has said previously, with respect to Han and Cao:

"The recited plasticizers of Han would not substantially dissolve polyanilines in the absence of a solvent, and would provide local mobility to polyanilines. The recited plasticizers of Han would not substantially dissolve in polyanilines [n]either. The recited plasticizers of Cao would not substantially dissolve polyanilines in the absence of a solvent, and would provide local mobility to polyanilines. The recited plasticizers of Cao et al. would not substantially dissolve in polyanilines."

In these statements the Examiner acknowledges that neither Han nor Cao et al. teach using a solvent as claimed by applicants.

With respect to the claims, Applicants refer to the Board's Appeal decision in this case where it stated:

"Appellants' method as set forth in claim 1 only requires the admixing of 'a solvent', 'an additive' and 'a polymer.' In Example 6, Han 'admixes' N-methyl pyrrolidinone, one of appellants' preferred 'solvents', tripropylamine, a 'plasticizer' ('additive') and an electrically conductive polyaniline, 'a polymer.' Han also teaches partial or substantial removal of the 'solvent.' Cao teaches the admixing of a polyaniline polymer with xylene, 'a solvent' and dodecylbenzene sulfonic acid, one of appellants' 'plasticizers'. Cao teaches removal of the solvent by conventional solvent removal methods."

(See Example 6 set forth above as to what Example 6 of Han actually states.)

In the passage quoted above, the Board refers to "N-methyl pyrrolidinone" as one of Appellants' preferred solvents and to tripropylamine as a "plasticizer". In this statement the Board is mixing the terminology used by Han, with the terminology used by Appellants. Han discloses only "plasticizers." Han refers to "tripropylamine" at col. 6, line 64 as "Illustrative of useful plasticizing agents" see col. 6, line 46, and further refers to "N-methyl pyrrolidinone at col. 7, line 64 as one of the "preferred plasticizing agents." (See col. 7, line 47). Although Applicants refer to "N-methyl pyrrolidinone" as an example of a solvent, Applicants' specification makes no mention of "tripropylamine." From the perspective of accuracy, the Board's statement above should have said that Han's example 6 teaches, (using Han's terminology), "a preferred plasticizer," e.g., N-methyl pyrrolidinone, and a plasticizer (of lesser preference), as illustrated by the compound "tripropylamine."

Han does not teach, as is claimed by Applicants, "a solvent" and an "additive to provide local mobility to said polymer to allow said polymer to associate with one another to achieve a crystalline-state" as claimed in claim 1.

Han has no teaching that N-methyl pyrrolidinone acts functionally different from tripropylamine. Whereas Appellants' claim defines a significant unexpected distinction between the solvent and the additive.

The Board further stated that:

"Because appellants form an admixture from the same ingredients as used in the prior art and because appellants subject their admixture to the same processing steps, that is, admixing of the ingredients with subsequent removal of "solvent" as does the prior art, it is reasonable to conclude that appellants' method and the products obtained by appellants' method are the same... Citing In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). "

The Board states that it is

"reasonable to presume prior art products and claimed products are identical or substantially identical where they are produced by the same or substantially the same processes."

Applicants disagree. The Board was in error in its analysis, Applicants do not "form an admixture from the same ingredients as those used in the prior art" and thus Applicants' process is not substantially the same as the prior art.

The Board also stated:

"Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product Whether the rejection is based on 'inherency' under 35 USC 102, or 'prima facie' obviousness' under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products." [footnotes and citations omitted]

As stated above, there is no teaching, suggestion for or motivation for Applicants'

invention and thus there is no showing of *prima facie* obviousness. There is no rejection

in the record based upon inherency and inherency can not support an obviousness

rejection, since what is inherent in a reference is not taught by the reference.

The Examiner is respectfully requested to reconsider his rejection of Claims 1 - 2 5 - 9, 11 - 16, 20, 22, 24, 25 and 40 - 42 under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Elsenbaumer (U.S. 4,983,322).

Elsenbaumer as a reference, does not anticipate nor render obvious the present invention. Appellants' emphasize, as has been stated, that their invention is a method of forming an admixture of solvent, an additive and a polymer which is either a precursor to an electrically conductive polymer or an electrically conductive polymer wherein the solvent is removed or partially removed and the additive provides local mobility to the polymer to allow the polymer chains to associate tightly with one another to achieve a high crystalline state.

Elsenbaumer discloses a method of using a solution to form a conducting polymer. He discloses polyaniline in combination with an oxidizing dopant. He illustrates the useful dopants by disclosing a list of compounds, a substantial number of which are halogen-containing compounds. His preferred dopants are chlorine and bromine-containing compounds with the most preferred dopant being FeCl_3 .

Elsenbaumer uses his dopant to modify the electrical properties of the polymer. This is an inherent difference in kind as compared with the present invention. Appellants have emphasized in the specification (page 11) that the morphology of a polymer is very important in determining the polymer's physical, mechanical and electronic properties. Applicants specifically state that prior art polyaniline base films of the type disclosed by Applicants have obtained an unexpected benefit as a result of their discovery that the additive provides local mobility to the polymer to allow the polymer chains to associate tightly with one another to achieve a high crystalline state.

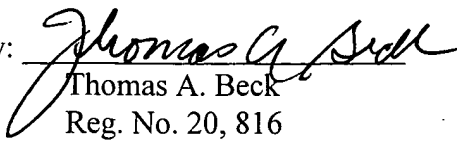
Applicants have provided experimental data (under oath) that clearly establishes and supports the necessary difference in kind rather than degree of the oxidant that they use as opposed to the dopant of Elsenbaumer under similar conditions. The preferred FeCl_3 species in solution of Elsenbaumer provides the Cl^- ions analogous to the HCl used by Appellants in their comparative evaluation. The enhanced crystallinity (one of the objects of the invention) enhances the electrical properties and renders the Applicants' invention an unexpected improvement.

The Examiner has rejected the claims using the Elsenbaumer reference which does not fully meet the statutory requirements for anticipation or obviousness. In order to complete the rejection he concludes the rejection with the comments :*“Also doping of the amorphous polyaniline film with aqueous hydrochloric acid (or any other dopant) would not change the morphology of solid film. Such method is different from the method taught by Elsenbaumer solution process, which would inherently yield the instant properties.”*

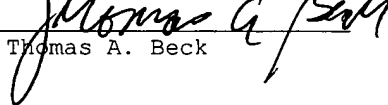
In the statements made by the Examiner, he has *sua sponte* added information not taught in Elsenbaumer, but which is taught by applicants, i.e., the use of a solvent. The Examiner is using Applicants teaching to add to Han and Cao et al. This is improper. For the Examiner to properly make the assertions that he has on the record with respect to rejecting the Applicants' claims over Elsenbaumer (and the other references cited), the Examiner must produce references to support his statements or an Affidavit as provided for under 37 C.F.R. 104(d)(2) for the Examiner to qualify himself as an expert to make these statements. The alternative for the Examiner is to withdraw the rejection(s).

The Examiner is requested to grant a two month extension of time within which to file a response. A check in the amount of \$430.00 is enclosed to cover the cost of the extension fee. Any fees that result from the addition of Claims 46 - 52 should be charged to Deposit Account 50-0510.

Respectfully submitted,

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I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail addressed to Commissioner of Patents & Trademarks, Post Office Box 1450, Alexandria, VA 22313-1450

Signature: 
Name: Thomas A. Beck

Date: January 19, 2005